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(Genus *Cnemidophorus*) of the Inland Southwest

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Howard K. Gloyd, Director

Bulletin o f t h e Chicago Academy of Sciences

A New Species and a New Subspecies of Whiptailed Lizards (Genus *Cnemidophorus*) of the Inland Southwest

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An especially large form of *Cnemidophorus* in southcentral Arizona has long been known to be a distinctive variant. Burger (1950) inadvertently described this distinct species as the subspecies *Cnemidophorus sacki stictogrammus*. He included in the statement of the range of this form the southeastern part of Arizona, southern New Mexico, and extreme western Texas. However, the smaller and conspicuously different-patterned population of this specific area is not *C. stictogrammus*; *C. stictogrammus* is not known to occur in New Mexico nor Texas. The population of this more eastern area (*C. gularis octolineatus*, part, in Smith, 1946 ; see Burger, 1950) is at present an unnamed and distinctive allopatric variant of *Cnemidophorus sacki* (as this species is now understood) with the northern part of its range centering in southern New Mexico. Its range meets that of *C. stictogrammus* in southern Arizona where the two species are sympatric (Fig. 1, map).

In applying the new name *stictogrammus* to the largest specimen in his type series of *C. sacki stictogrammus* (holotype, USNM 132456), Burger (*op. cit.*) inadvertently described a new species that is sympatric with *C. sacki* in southern Arizona. He confused the two species to the extent of having both of them represented in his type series used for the description of *C. sacki stictogrammus*. The following paratypes in this type series are members of the species *C. sacki*: University of Illinois Museum of Natural History 15100, 15102-05, 15107 ; Chicago Academy of Sciences 15683-84. The following paratypes in this series are members of the species *C. stictogrammus*: **UIMNH 15101, 15106**. Eight of the eleven specimens of this type series belong to a different species than does the holotype. The fully adult "giant" individuals of *C. stictogrammus*

(reaching to over 130 mm. snout to vent, and over 17 inches total length) are often lacking from relatively small samples and none of these large specimens are present in Burger's type series of 11 specimens.

The holotype of *C. sacki stictogrammus* Burger is now the holotype of a new species, *C. stictogrammus* Burger. The northwestern population of *C. sacki*, now without a name, is described herein as a new subspecies.¹

***Cnemidophorus sacki exsanguis*² subsp. nov.**

Southwestern Spotted Whiptail

Figure 4, right

Cnemidophorus sacki stictogrammus Burger, part, 1950, Chicago Acad. Sci., Nat. Hist. Misc., no. 65:5.

Holotype. Number 3737, Department of Zoology, University of California, Los Angeles. Collected August 10, 1948, at Socorro, Socorro County, New Mexico, by Richard G. Zweifel and Kenneth S. Norris (Fig. 3 and 4).

Diagnosis. A moderately large subspecies of *Cnemidophorus sacki* (as now understood) characterized by (1) maximum snout-vent length less than approximately 100 mm.; (2) six complete light-colored longitudinal body stripes which are *persistent* throughout life ; (3) adults with small light colored spots in the dark fields of the upper surfaces of the body; (4) hatchlings without spots on body; (5) light spots predominantly in the lateral and dorsolateral dark fields, fewest in the middorsal field, and commonly overlapping the light stripes; (6) tail tan, pinkish, greenish-brown or olive-greenish; (7) 72.1 ± 1.1 scales around midbody, excepting ventral plates; (8) 175.2 ± 1.5 scales from occiput to rump; (9) 4.6 ± 0.24 scales between the paravertebral light stripes at midbody ; (10) circumorbital semicircle scales not extending forward of the frontoparietal midpoint.³

Description of holotype (alcohol specimen). Adult female ; snout-vent length 92.7 mm.; tail length 121 mm. (incomplete) ; right hind leg to base of fourth toe nail 61.3 mm. Transverse scale rows (measured on

¹Further investigation will probably show that the northeastern population (*C. sacki gularis*) and the northwestern population (*C. sacki* subsp. nov.), described herein, are *not* conspecific.

²The name (*L. exsanguis*, without blood) refers to the distinctive difference of this entity from *Cnemidophorus sacki stictogrammus* Burger, with which it was formerly included.

³Lowe and Zweifel (1952) have given scale counts for a special series of this subspecies from the confines of Socorro County, New Mexico. The slightly different values for frequency distributions of scales given herein, for a larger and more representative series, are to be preferred for present purposes. See Table 1.

the midline from occiput to rump) number 160 ; longitudinal scale rows (measured around midbody on lateral and dorsal surfaces, exclusive of ventral plates) number 70 ; longitudinal scale rows on base of tail directly posterior to postanal small scale area number 33 ; scales between paravertebral stripes at midbody 4-5 ; enlarged preanal scales 3 ; femoral pores 19/17.

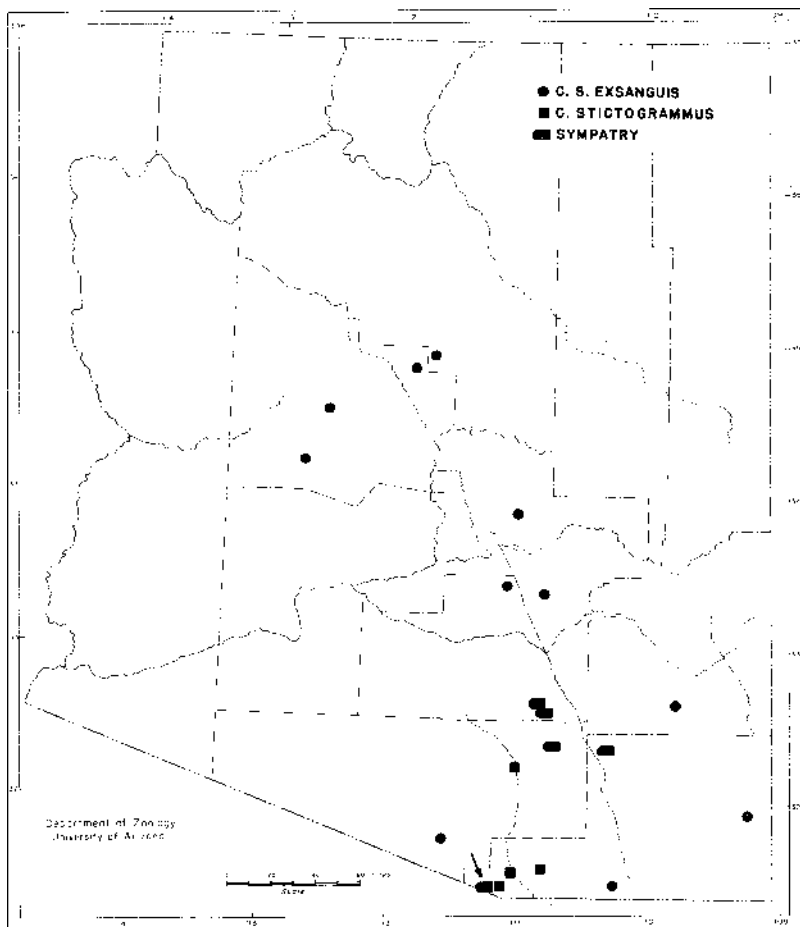


Fig. 1. The distribution of *Cnemidophorus stictogrammus* and *C. sacki exsangvis* in Arizona. The localities are as given in the text for adult specimens of each species examined in this study and, therefore, do not represent the entire known distribution of these two species in Arizona. The arrow points to the type locality of *C. stictogrammus* (= *C. sacki stictogrammus* Burger).

The small circumorbital semicircle series of scales are not extensively developed forward and do not reach the frontal ; they reach only to the approximate midpoint of the frontoparietal (Fig. 3).

General head scalation is that usual for the *sexlineatus* group (see Fig. 3) : 3 parietals (including interparietal) ; 2 frontoparietals ; 4 enlarged supraoculars ; 1 frontal ; 2 prefrontals ; 2 nasals ; postnasals 1/1 ; loreals 1/1 ; preoculars 1/1 ; suboculars 3/3. Supralabials 6/6, designating posteriormost as the first in contact with the posteriormost sub-ocular ; infralabials 6/6, with posteriormost under the posteriormost supralabial. A mental and postmental ; chinshields 6/6.

Table. 1. Scale counts for *Cnemidophorus stictogrammus* and *C. sacki exsanguis*. Specimens of *C. s. exsanguis* from southern Arizona and southern New Mexico ; *C. stictogrammus*, from southern Arizona. O-R—occiput to rump; around—around midbody, excepting ventrals; P-V—between paravertebral stripes. Data graphed in Figure 2.

Charac- teristic	N	<i>C. sacki exsanguis</i>	N	<i>C. stictogrammus</i>	t	P
Scales O-R	24	175.2±1.5 (160-185)	17	209.9±2.2 (195-226)	13.0	<.001
Scales around	24	72.1±1.1 (62-82)	17	104.7±1.2 (98-115)	20.0	<.001
Scales P-V	24	4.6±0.24 (2-8)	11	8.0±0.58 (5-11)	5.4	<.001

Mesoptychials are enlarged and abruptly differentiated from the small scales of the posterior gular fold (= mesoptychial fold). Post-antibrachials are conspicuously enlarged, and do not grade gradually into the smaller surrounding scales.

There are six complete, distinct, and unbroken light longitudinal stripes on the body. A trace of a seventh (vertebral) stripe occurs on the dorsal midline of the nape. The two paravertebral and two dorsolateral stripes extend faintly onto the base of the tail. The lateral stripe extends prominently onto the anterior part of the tail. Anteriorly, the paravertebrals extend to the supraocular areas, each dorsolateral to the anterior corner of the eye, and the lateral stripe to the anterior sub-ocular area.

Light colored spots occur in all dark fields. The spots are light yellow, small (many smaller than, and few larger than, ca. 1.0 mm. dia.), more sharply distinct on the posterior body and tail base, not strictly arranged in longitudinal rows in the dark fields, several overlap the light stripes, and they occur more or less continuously from occiput to rump. The following numbers of spots can be reasonably assigned to the particular dark fields between the occiput and base of the tail: mid-dorsal field 7 ; left and right dorsal lateral fields (combined) 68 ; left

and right lateral fields (combined) 73 ; left and right lower lateral fields (combined) 29 ; total 177.

The ground color of upper surfaces of the head and body is brown. The dorsal light stripes are gray (yellow in life ; see Table 3). The ground color of ventral surfaces is faint bluish. Upper surfaces of the tail are brown to tan ; ventrally, yellowish.

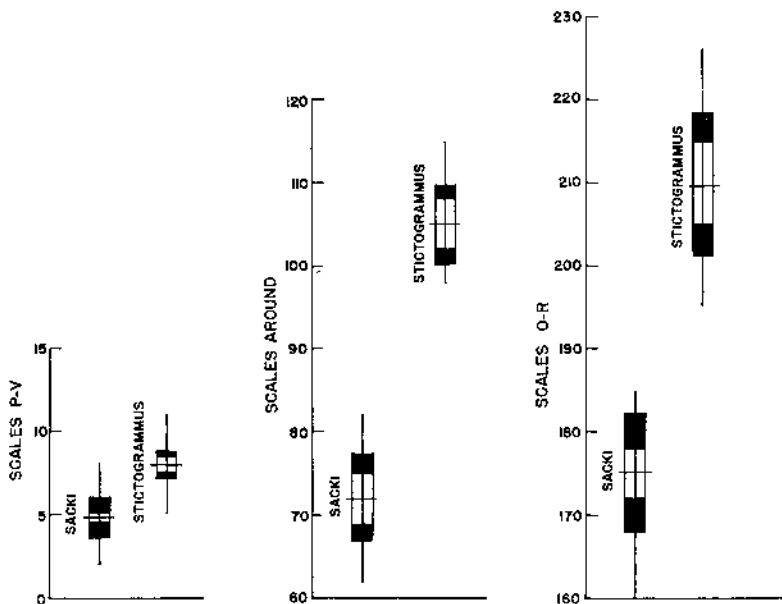


Fig. 2. Characteristics of scalation in *Cnemidophorus sacki* from southern Arizona and southern New Mexico, and of *C. stictogrammus* from southern Arizona; the range, mean, two standard errors (each white rectangle), and one standard deviation (one white + black rectangle) are shown for each frequency distribution. Data in Table 1.

Variation. Important variation in this form was earlier analyzed and presented under the name *C. s. stictogrammus* Burger by Lowe and Zweifel (1952) for comparative purposes in the study of species of this genus. Results of statistical analysis are set forth here in Table 1 for scale counts, and in Table 2 for characteristics of spots. The raw data for these analyses was obtained from specimens collected by the author, R. G. Zweifel, and K. S. Norris in New Mexico, and more recently by the author in Arizona.

The young of *C. s. exsanguis* are without light spots in the dark fields. During ontogeny there is appearance of light spots followed by progressive change in their relative size and abundance.

The following description of the color pattern taken from the field notes of the author appears to well characterize the adults of this subspecies. The specimen (CHL 2915) was collected July 29, 1950, in Mulligan Gulch, 14.4 mi. (by rd.) S. W. Magdalena, ca. 6500 ft.,

Table 2. Number of light spots in dark fields of *Cnemidophorus sacki exsanguis* from Socorro County, New Mexico. Data from Lowe and Zweifel (1952).

Specimen number	Left lower lateral	Left upper lateral	Spots per Left dark field		Right dorso-lateral	Right upper lateral	Right lower lateral	Mean
			dorso-lateral	Middorsal				
1	11	31	34	9	27	29	13	
2	16	34	28	12	29	37	15	
3	14	36	31	7	30	36	17	
	13.7	33.7	31.0	9.3	28.7	34.0	15.0	165.4

Table 3. Colors of the longitudinal body stripes of adult *Cnemidophorus sacki exsanguis* represented by those recorded for a living specimen from Socorro County, New Mexico. See text.

Stripe	Color		
	Anteriorly	Midbody	Posteriorly
Lateral	faint yellow	light gray	light gray
Dorsolateral	bright yellow	light yellow	tan
Paravertebral	bright yellow	light yellow	light brown

Socorro County, New Mexico (Pinyon-Juniper association). The stripes vary in color from white and light gray to yellow and tan. Anteriorly and dorsally these colors are more yellow. There are 6 stripes with a short 7th on the midline of the neck. (The variable colors of the 6 primary stripes are given in Table 3 as taken from a table in the species account of the field notebook.) The short middorsal (7th) stripe is dull yellowish brown and extends posteriorly to a point opposite the forward ridge of the insertion of the front limbs where it disappears. The ground color of the dark fields increases in brownness, i.e., becomes progressively darker, from the lower lateral field upward to the dorsal surface. The lowest lateral dark field is light brown ; the upper lateral field dark brown. The three dorsally positioned dark fields are blackish brown

anteriorly and dark brown posteriorly. The dorsal surface of the tail is brown ; anteriorly it is the same brown as that of middorsal body, legs, and feet ; the posterior three-fourths of the tail is olive brown and olive greenish, becoming distinctly olive green on the upper surface of the distal third. The light spots in the upper lateral field are whitish to faint brown ; in the dorsolateral fields all are orange brown to brownish orange ; the spots in the middorsal field are essentially the same in color

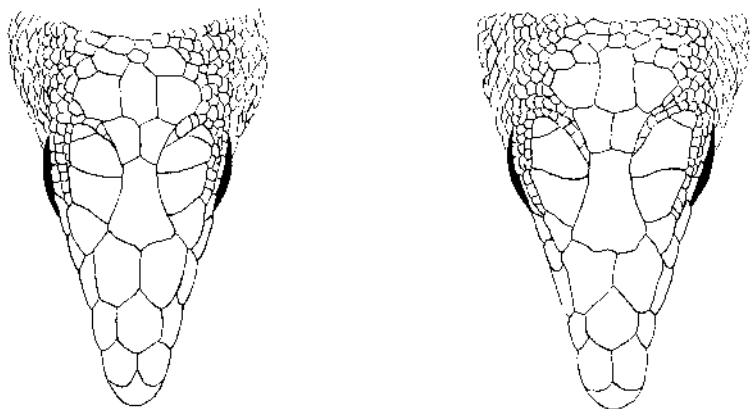


Fig. 3. Dorsal views of heads of *Cnemidophorus sacki exsanguis* (right) and holotype of *C. stictogrammus* (left). Same specimens as in Fig. 4 (photograph).

as in the dorsolateral fields. Ventral surfaces of the body and head are immaculate white to light grayish ; ventrum of tail white to faint yellowish ; ventral surfaces of feet and toes white to pinkish. The lower lateral light gray stripe on the body extends posteriorly onto the anterior half of the thigh, and onto the anterior one-third of the lateral surface of the tail as a distinctive pinkish stripe. It continues anteriorly over the ear to under the eye as a faint yellowish stripe ending at the anterior corner of the subocular area. The dorsolateral stripe faintly extends onto the anterior one-third as tan tips of the scales of the tail in the dorsolateral position. This stripe continues forward over the eye as a yellow stripe ending at the upper anterior corner of the eye. There is an abrupt color change at the line of the mouth with the supralabials tan and light brown and the infralabials white. The iris is yellow and greenish yellow.

CHL 2967 from 4.6 mi. s. Glenwood, ca. 4700 ft., Catron County, New Mexico (Juniper and Mesquite) differs from the Mulligan Gulch (ca. 6500 ft.) specimen described above, as follows : (1) the dorsal light

stripes are dull yellowish brown anteriorly, rather than yellow, with little difference in color anterioposteriorly ; (2) the lower lateral stripe is a darker brownish gray ; and (3) the stripe of the thigh and lateral surface of the tail is whitish rather than pinkish.

Of the color patterns of several other specimens from New Mexico which are recorded in the author's species accounts, only that for the locality of Rosedale Mine, ca. 7200 ft., San Mateo Mountains, Socorro County, New Mexico (Yellow Pine) is especially notable for a difference. In specimens from this higher elevation, there is a more intense melanic pigmentation. The blackish-brown general ground color is considerably darker than that of populations in vegetation types at lower elevations.

It is also noted that the population of the Davis Mountains of western Texas, in the eastern part of the range, appears to be more similar to the specimens of Socorro County, New Mexico in minor infrasubspecific variation of color pattern than does the population of the Chiricahua Mountains of eastern Arizona, in the western part of the range.

Comparisons. *C. s. exsanguis* and *C. stictogrammus* differ in the maximum size attained. *C. s. exsanguis* is a moderately large race with large adults commonly ca. 90 mm. snout to vent, and reaching a maximum snout-vent length of less than ca. 100 mm. *C. stictogrammus* is a longer and more robust race with large adults more than 110 mm. snout to vent, and reaching a maximum snout-vent length of ca. 130 mm. ;⁴ this is the largest species of *Cnemidophorus* occurring in the United States.

The color patterns of approximately maximum sized adults of these two subspecies are quite distinctive (Fig. 4). In *s. exsanguis* the light stripes remain complete, the anterior ground coloration does not markedly change, and the spotting remains relatively small in amount and *not* far more conspicuous than the dorsal stripes. In *s. exsanguis* there is no exceptionally pronounced difference in color pattern between the medium-sized adults and the maximum-sized adults. The tails of the living young of the two forms are markedly distinct, with *C. stictogrammus* having a bright orange tail and *s. exsanguis* having a brownish one. Moreover, the posterior portion of the tail of *C. stictogrammus* remains definitely orange to orangish. The body of each species is striped but is *not* with spots at the time of hatching and as a juvenile. Excellent photographs of an adult *s. exsanguis* are provided by Hobart Smith (1946: p. 410, pl., 114, A, B).

⁴One specimen (*a*) in excess, measured when fresh, was 131 mm. (ca. 5 in.) snout to vent, and 449 mm. (ca. 17½ in.) total length (from Pima County, Arizona).

In *C. stictogrammus* markedly pronounced changes in color pattern occur as maximum-sized adulthood is attained. In such individuals the longitudinal light stripes of the body become progressively less distinct, obscured, or broken, and finally may completely disappear on all upper surfaces of the body. The pattern is concomitantly shifted from one dominated by light longitudinal stripes to one completely or predomi-

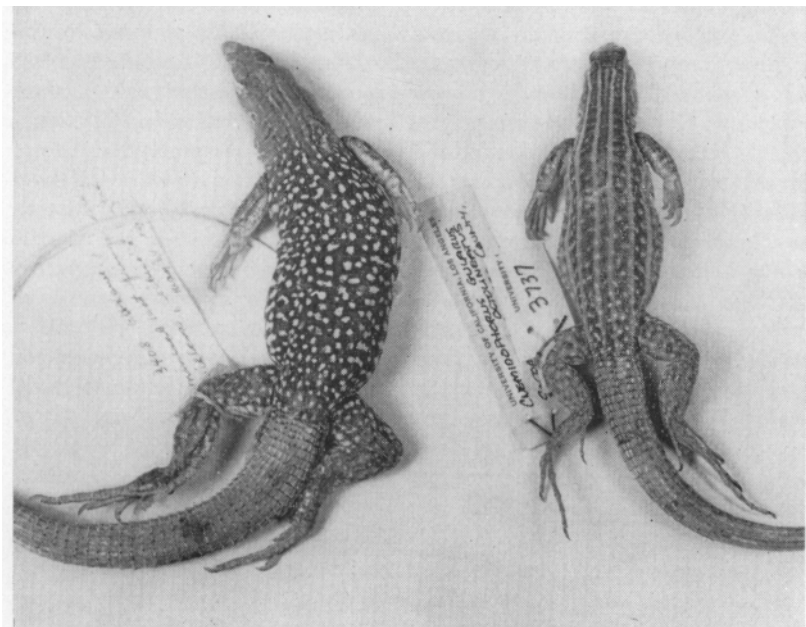


Fig. 4. Comparison of the dorsal color patterns of *C. s. exsanguis* (right), holotype, snout-vent length 92.7 mm., large adult female, and *C. stictogrammus* (left), snout-vent length 112.0 mm., large adult female collected May 24, 1951, at Mineral Hot Springs, extreme northwest Cochise County, Arizona, by H. K. Gloyd and C. H. Lowe, Jr. Photographed by George M. Bradt, Tucson, Arizona.

nantly characterized by numerous, large and conspicuous light spots. The ground color gradually changes most conspicuously in the neck and head region to reddish, with some obscuring there of spots as well as stripes (Fig. 4). Such fully grown adults commonly fail to appear in the collections of relatively small series (e.g., 10-15 individuals).

While the collection of large numbers of *Cnemidophorus sacki* of all age-size groups from southern Arizona and southern New Mexico clearly

demonstrates the pronounced degree of difference between *C. s. exsanguis* and *C. stictogrammus*, the differences are so great in color pattern alone that a single large-sized adult of each suffices to indicate immediately the very respectable magnitude of the genetic divergence of these populations.

Highly significant differences obtain in the scalation of the two species (Table 1 and Fig. 2). The numbers of scales from occiput to rump (as counted along the dorsal midline) and around midbody (excepting ventrals) serve as excellent "key" characters for the identification of *C. sacki exsanguis* and *C. stictogrammus* in sympatric populations in the United States (southern Arizona). *C. stictogrammus* has more than 190 dorsal scales from occiput to rump and more than 90 dorsal scales around midbody; *C. sacki exsanguis* has less than 190, and less than 90, respectively. Whereas fully grown individuals of the two are markedly distinct in size and color pattern, characteristics of scalation remain the most reliable diagnostic characters for immature individuals. This is not to say, however, that certain other more subtle differences are not present in the immature of the two species. Among these more subtle characters of these sympatric siblings one notes, for example, differences in shade of body ground color and tail color, differences in spotting, patterning on the upper surfaces of the leg, etc. Certain other scale differences are also more subtle than the especially clear-cut differences in dorsal body scales. For example, there are significant but less conspicuous and clear-cut differences in the anteriad extension of the circumorbital semicircle scales, relative size of the anteriormost of the four supraocular scales, ratio of the midline suture of the nasal scales to the length of the frontonasal scale, etc.

A diagnosis, and description of the holotype of the new species, *Cnemidophorus stictogrammus* Burger, follows; this refers to the species as it is known to occur in southcentral Arizona. This population of *C. stictogrammus* in Arizona probably will be found upon further investigations to be a distinctive northern subspecies of a wide ranging species in Mexico.

***Cnemidophorus stictogrammus* Burger**

Giant Spotted Whiptail

Figure 4, left

Cnemidophorus sacki stictogrammus Burger, part, 1950, Chicago Acad. Sci., Nat. Hist. Misc., no. 65:5.

Holotype. No. 132456, United States National Museum. Collected at Yank Spring in Sycamore (= Bear) Canyon, approximately 6 miles southeast of Ruby, Santa Cruz County, Arizona, by Max Hensley and W. L. Burger.

Diagnosis. A large species of *Cnemidophorus* characterized by : (1) a maximum snout-vent length of adults in excess of 130 mm. (ca. 5 in.) and a total length of 440 mm. (ca. 17 in.) ; (2) six or seven complete light colored longitudinal body stripes in young individuals, which stripes are *not* persistent as complete stripes throughout adult life (also, when present, the seventh—vertebral—stripe is less distinct than the others) ; (3) adults characterized by a pattern of distinct spots on the upper surfaces of the body, with much or complete loss of the longitudinal stripes of earlier life ; (4) neck and posterior part of the head of adult males bright reddish brown; (5) distal portion of tail orange to orange-brown ; (6) antieriad extension of the circumorbital semicircle series of scales to or beyond the midpoint of the frontoparietal scale ; (7) length of the midline nasal suture equal to or greater than the length of the frontonasal scale ; (8) postanterobranchials greatly enlarged (3-5 times) and abruptly differentiated from the adjacent scales ; (9) mesopterygials markedly enlarged and abruptly differentiated from the granular scales of the posterior gular fold (mesopterygial fold) ; (10) two rows of scales between the posterior infralabials and sublabials (= chin shields) ; (11) 209.9 ± 2.2 scales from occiput to rump ; (12) 104.7 ± 1.2 scales around midbody, excepting enlarged ventrals; (13) 8.0 ± 0.58 scales between paravertebral light stripes at midbody.

Description of holotype (preserved in alcohol). Small adult female, snout-vent length 102 mm., tail length 223 mm. (damaged and regenerated), right hind leg 61 mm. to base of fourth toe nail. Transverse scale rows (measured on the midline from occiput to rump) number 206 ; longitudinal scale rows (measured around midbody on lateral and dorsal surfaces, excluding ventral plates) number 100; scale rows between paravertebral stripes at midbody number 6.5 ; enlarged preanals 3 ; femoral pores 16/17.

The small circumorbital semicircle series of scales extends forward to the approximate midpoint of the frontoparietal scale. The anterior-most of the four supraoculars on each side is especially small and constitutes approximately 30 per cent of the overall length of the four supraoculars. The midline nasal suture is approximately one half the length of the frontonasal scale. Mesopterygials are abruptly differentiated from the granular scales of the gular fold. Postanterobranchials are abruptly enlarged 4-5 times the size of adjacent scales.

General head scalation is that usual for the *sexlineatus* group ; 3 parietals (including interparietal), 2 frontoparietals, 4 supraoculars, one frontal, two prefrontals, two nasals, postnasals 1/1, loreals 1/1, preoculars 1/1, suboculars 3/3. On the right side a small scale is split off of the *anterior subocular* and is bordered by the fourth supralabial below

and by the preocular above. Supralabials 6/6 ; infralabials 6/6. A mental and postmental ; uniformly enlarged chinshields (= sublabials) 5/5.

There are *six* complete longitudinal body light stripes on a dark blackish-brown ground color. There is a notable progressive increase, laterally, in the width of the light stripes, with the paravertebral stripes narrowest (ca. 3 scales wide at midbody), dorsolaterals intermediate in width (ca. 4 scales wide at midbody), and the laterals widest (ca. 5 scales wide at midbody). A faint trace of a seventh (middorsal) light stripe occurs ; it is especially evident on the nape. The paravertebral stripes extend anteriorly to over the eye and posteriorly onto the tail ; the lateral stripes extend anteriorly over the ear opening forward to the posterior subocular scale.

Light spots occur on the body in six dark fields ; they occur in each field except the middorsal. There are approximately 16 and 18 spots, respectively, in the left and right lower lateral dark fields ; approximately 27/26 in the two upper lateral fields ; and approximately 23/25 in the two dorsolateral fields. The spots are positioned approximately down the center of each dark field. The size (diameter) of the spots at mid-body is 2-3 mm. As this is not a large adult animal, the stripes are present and complete, and they form a conspicuous part of the color pattern of the upper surfaces of the body. The name *stictogrammus* ("Referring to the typical dorsal pattern of alternating longitudinal rows of light spots and light stripes," Burger, 1950:5) unfortunately has been applied to a form which, in fully grown adults, does not have the pattern as given by its author (quoted). The ventral surfaces are immaculate (probably white to cream in life, as in live material studied).

Distribution and locality records. The known geographic range of *C. sacki exsanguis* is southeastern Arizona, southern New Mexico, extreme western Trans-Pecos Texas, and adjacent northwestern Mexico.

The known range of *C. stictogrammus* is southcentral Arizona and adjacent Sonora, Mexico. Its relationship to other west Mexican subspecies of *C. sacki* is being currently investigated.

The following locality records in Arizona are only those localities from which large adult specimens are available, have been examined in this study, and are without question assigned at this time to one species or the other (Fig. 1, map). The majority of these adults have been examined by the author while as living or fresh specimens. The specimens are deposited (under various names) in the collections of the Chicago Academy of Sciences, Chicago Natural History Museum, University of Illinois, University of Arizona, the collection of William H. Woodin III, Tucson, Arizona, and the collection of the author.

Cnemidophorus stictogrammus

Arizona. *Pinal County*: 1 mi. s. Oracle; 2 mi. s.e. Oracle; Pepper Sauce Canyon, near (s.e.) Oracle. *Pima County*: Santa Catalina Mountains; Tucson (Santa Cruz River bottom). *Santa Cruz County*: Yank Spring, in Sycamore (= Bear) Canyon, ca. 6 mi. s.e. Ruby (type locality); Alamo Spring; 10 mi. s. Tubac; 4- mi. w. Patagonia. *Cochise County*: Mineral Hot Springs.

Cnemidophorus sacki exsanguis

Arizona. *Coconino County*: Oak Creek, at Indian Gardens. *Yavapai County*: Oak Creek, at Red Rock Crossing east of Red Rock; Prescott Mountains; Yarnell. *Gila County*: Sierra Ancha (Mountains); Pinal Mountain. *Pinal County*: 5 mi. n.e. Superior; 1 mi. s. Oracle; 2 mi. s.e. Oracle. *Pima County*: Santa Catalina Mountains; Baboquivari Mountains. *Santa Cruz County*: Yank Spring in Sycamore (= Bear) Canyon, ca. 6 mi. s.e. Ruby. *Graham County*: Graham (= Pinaleno) Mountains. *Cochise County*: Mineral Hot Springs; Huachuca Mountains; Chiricahua Mountains.

The two species are known to be sympatric in the Santa Catalina Mountains in Pima and Pinal Counties, Arizona (where I have shot adults of both while standing in the same spot in lower Sabino Canyon), at Yank Spring in Sycamore (= Bear) Canyon, approximately 6 miles southeast of Ruby, Santa Cruz County (type locality of *C. stictogrammus*) and at Mineral Hot Springs, Cochise County (Fig. 1, map).

The locality of sympatry in Sabino Canyon, Santa Catalina Mountains, is at 3000-3500 feet elevation. The habitat is Riparian Woodland comprised of Cottonwood, Willow, Sycamore, Ash, and Walnut bordered on the canyon sides by the Palo Verde-Sahuaró Desert climax of this area. Neither lizard is a desert species; both enter the desert here in riparian communities along the drainageways, thereby extending below the more mesic and more highly elevated Oak Woodland and Coniferous Forest habitats of the mountain. Whereas *C. stictogrammus* does not extend above the Oak Woodland and is not known to occur above 5000 feet elevation, *C. sacki exsanguis* extends upward into the lower part of the Yellow Pine Forest at elevations between 6000 and 7000 feet.

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of Arizona for the drawing of Figures 2 and 3, and to George M. Bradt of Tucson, Arizona, for Figure 4 (photograph).

Summary

The type series of *Cnemidophorus sacki stictogrammus* Burger 1950 is comprised of two distinct and sympatric forms to be known at present as *C. stictogrammus* Burger and *C. sacki exsanguis* subsp. nov. This has been revealed primarily through statistical analysis of characteristics of body scalation. Other samples representing additional sympatric populations from localities in Arizona have been studied.

It appears that several of the Mexican forms now treated under the species *Cnemidophorus sacki* are either members or allies of *C. stictogrammus*. The *C. stictogrammus* of Arizona is regarded as a terminal form of a distinctive Mexican complex that is currently under study.

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